

PATENT COOPERATION TREATY

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/PT2004/000026

International filing date (day/month/year)
28.10.2004

Priority date (day/month/year)
28.10.2004

International Patent Classification (IPC) or both national classification and IPC
G01N3/08

Applicant
UNIVERSIDADE DO MINHO

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1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/PT2004/000026

AP20 Rec'd PCT/PTO 17 APR 2006

Box No. 1 Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/PT2004/000026

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or
industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	4
	No: Claims	1-3,5-7
Inventive step (IS)	Yes: Claims	
	No: Claims	1-7
Industrial applicability (IA)	Yes: Claims	1-7
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

1AP20 Rec'd PCT/PTO 17 APR 2004
PCT/PT2004/000026

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1) Reference is made to the following documents:

- D1: BOEHLER J P ET AL: "A NEW DIRECT BIAXIAL TESTING MACHINE FOR ANISOTROPIC MATERIALS" 1 March 1994 (1994-03-01), EXPERIMENTAL MECHANICS, SOCIETY FOR EXPERIMENTAL STRESS ANALYSIS, US, PAGE(S) 1-9, XP000574645 ISSN: 0014-4851
- D2: PATENT ABSTRACTS OF JAPAN vol. 2000, no. 02, 29 February 2000 (2000-02-29) & JP 11 327286 A (MURATA MACH LTD), 26 November 1999 (1999-11-26)
- D3: URUMOV G T: "A MACHINE FOR TESTING SHEET SPECIMENS FOR FATIGUE UNDER TWO- FREQUENCY LOADING CONDITIONS" October 1997 (1997-10), INDUSTRIAL LABORATORY, CONSULTANTS BUREAU. NEW YORK, US, PAGE(S) 620-622, XP000777371 ISSN: 0019-8447

2) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-3 and 5-7 is not new in the sense of Article 33(2) PCT.

The document D1 discloses (the references in parentheses applying to this document):

Claim 1:

A multiaxial universal testing machine capable to evaluate some behaviour parameters, like tensile, compression or fatigue, in different directions simultaneously of materials with planar structures having a central block (pag 2, col 2, in paragraph "general features" the feature of the octagonal frame, and fig 1), working as a supporting structure, where the platforms are rigidly attached in a radial orientation (fig 1 and fig 3) in which the arms are seated (fig 1 and fig 3), designed to apply a required force and displacement to each gripping jaw (fig 1 and fig 3 and pag 4, col 1), where the test specimen is attached (fig 1 and 3).

Claim 2:

A multiaxial universal testing machine according to claim 1 wherein each arm is made up of an electric motor with speed reducer, coupled to a screw type linear drive, in series with a load cell and a gripping jaw (pag 3, col 1, in paragraph "drive unit").

Claim 3:

A multiaxial universal testing machine according to claim 2 the rotational movement of the geared motor is converted into linear displacement and force by the screw type linear drive, monitoring and controlling this parameters with a rotary encoder in the motor (to the displacement) and a load cell, between the screw type linear drive and the gripping jaw (to the force), respectively (pag 3, col 1 and 2, in paragraph "drive unit").

Claim 5:

A multiaxial universal testing machine according to claim 1, the multiaxial universal testing machine can be composed by 1, 2, 4, 6, 8, 10, 12, 14, 16, 18 or 20 axis, keeping all the capabilities needed to evaluate the mechanical behaviour and performance of materials with planar structures (see fig 1, wherein this case the device has 4 axis, but to implement more axis would be obvious for the skilled in the art, see for example the device with 8 axis in D3, fig 1).

Claim 6:

A multiaxial universal testing machine according to claim 5 and the kind of assay, the test specimen shape must be associated to the number of activated axis (see D1, the paragraph in pages 6 to 9, "the cruciform specimen" and "the optimized specimen design").

Claim 7 is considered also as not being novel over D1, as it is the corresponding method claim of the apparatus claim 1, claim 7 is therefore not novel over D1, and the same arguments apply, mutatis-mutandis.

3) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 4 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 4, and discloses the subject-matter of claim 3.

The subject-matter of claim 4 therefore differs from this known in D1, in that the slide carriage can travel along a linear dry bearing.

The problem to be solved by the present invention may therefore be regarded as to have a bearing that will avoid any leak of the lubricant onto the specimens studied, like tissues.

The solution proposed in claim 4 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons: the dry bearing is considered as an obvious selection for the skilled in the art who, when confronted to a possible leakage of a lubricant of the bearing system that could stain and pollute the specimen, would think about the possible alternative of having a bearing without any liquid lubricant (avoiding therefore any risk of staining the specimen), and therefore would choose without involving an inventive step a dry bearing for the test device. Those dry bearing system are per se not novel, as it can be find in D2.

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